

CLAIMS

1. A surface treatment method for a light-metal casting, characterized by comprising:

5 a casting step for applying a casting pressure of more than about 50 megapascal from an ejection plunger to a molten metal of a light-metal material poured into a die, to form a casting having pinholes generated in a casting surface, the pinholes being suppressed to generate so as to meet a
10 predetermined condition;

a polishing step for reducing a roughness of a polished surface obtained by polishing said casting surface to not more than a predetermined value;

15 a painting step for forming a first resin coating layer on said polished surface after being polished; and

a plating step for forming a layer of a metal or a metal compound through a dry-type plating on a surface of said resin coating layer.

20 2. A surface treatment method for a light-metal casting, as described in claim 1, wherein the predetermined condition of the pinholes generated on said polished surface is that the number and a maximum opening dimension of the pinholes generated in a predetermined
25 area of the polished surface is not more than a predetermined value.

3. A surface treatment method for a light-metal casting, as described in claim 2, characterized in that the number of said pinholes is in the range of 1 to 15
30 per 100 cm² of said polished surface and said maximum opening dimension is not more than 2 mm.

35 4. A surface treatment method for a light-metal casting, as described in claim 3, characterized in that the number of said pinholes is in the range of 1 to 10 per 100 cm² of said polished surface, said maximum opening dimension is not more than 2 mm and the number of the pinholes having the maximum opening dimension of 1.0

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to 2.0 mm is one or zero.

5 5. A surface treatment method for a light-metal casting, as described in any one of claims 1 to 4, characterized in that a roughness of said polished surface obtained by said polishing step is 6.3 μm in R_{max} .

10 6. A surface treatment method for a light-metal casting, as described in claims 1 to 5, characterized in that a thickness of said first resin coating layer is not less than 10 μm and not more than 40 μm .

15 7. A surface treatment method for a light-metal casting, as described in claims 1 to 6, characterized in that a transparent second resin coating layer (a topcoat layer) is formed on said metal or metal compound layer.

20 8. A surface treatment method for a light-metal casting, as described in claim 7, wherein each of said first and second resin coating layers includes a primer coating layer.

25 9. A surface treatment method for a light-metal casting, as described in claim 7, wherein a thickness of said transparent second resin coating layer (a topcoat layer) is not less than 20 μm and not more than 50 μm .

30 10. A surface treatment method for a light-metal casting, as described in claim 1, wherein said polishing step is a barrel finishing process.

35 11. A surface treatment method for a light-metal casting, as described in claim 1, wherein said plating step for forming a layer of a metal or a metal compound through said dry-type plating is a sputtering process.

 12. A surface treatment method for a light-metal casting, as described in claim 1, wherein said casting step includes a pressurizing step for applying, by a pressurizing pin, a pressurizing force to a predetermined portion of the molten metal of said light-metal material filled in a die cavity during a solidification process of said molten metal under high pressure.

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13. A surface treatment method for a light-metal casting, as described in claim 1, wherein said casting of said light-metal material is an aluminum wheel.

14. A shiny aluminum vehicle wheel, characterized in that the aluminum wheel is cast by a high-pressure casting process, in which a molten metal of an aluminum material filled in a cavity of a die for casting a vehicle wheel is pressurized by an ejection plunger and, in a solidification process of the molten metal, a thick portion of the cavity is pressurized by a pressurizing pin arranged in the die, so that pinholes generated in a polished surface of an aluminum casting after being polished has a dimension of not more than 2.0 mm diameter and has a number not more than 15 per 100 cm² area; and that the aluminum wheel comprises a surface-treated layer wherein the casting surface is barrel-polished to form a polished surface with a roughness Rmax of not more than 1.6 μm, a resin coating layer with a thickness of not less than 10 μm and not more than 40 μm is formed as an undercoat on said polished surface, a dry-type plating layer made of a metal or a metal compound is formed on said resin coating layer and a transparent topcoat layer is formed on said dry-type plating layer so as to provide a design surface.

15. A shiny aluminum vehicle wheel as described in claim 14, wherein said aluminum material is aluminum.

16. A shiny aluminum vehicle wheel as described in claim 14, wherein said aluminum material is an aluminum alloy.

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